Proposed
Grid Protocol Architecture
Working Group

(Johnston, Foster, Moore)

GGF-1

Issues

- How do we answer the question “what is a minimal set of protocols?”
  - characterize existing Gird protocols and where GF WGs are working
  - straw examples – IPG arch.; Moore-Johnston picture from last GF meeting; Foster, et al, Anatomy of Grid
- What should a GPA WG accomplish in year one?

GGF-1 BOF

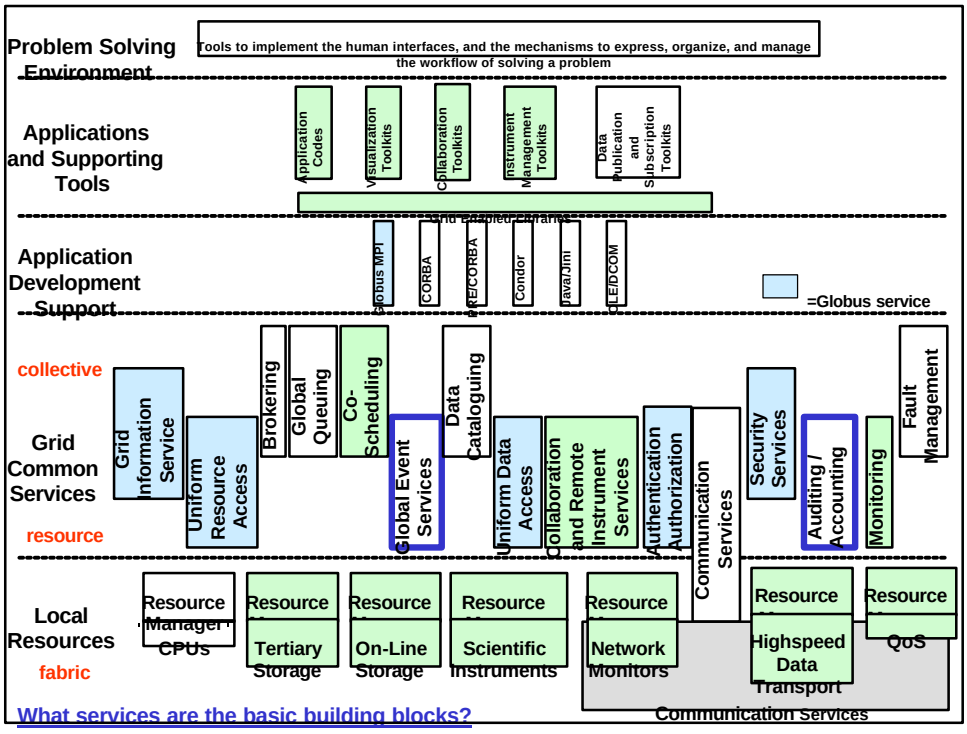
- About 40 people attended Grid Arch. BOF
- 25 signed up for an email list
- points of the draft charter were discussed
- Consensus: developing an architecture is useful
- Less consensus: What is it's utility?
  - vision for the Grid for GF
  - identify missing components and surplus components in GF work
  - a tool for guidance of GF working groups (via GFSC)

GGF-1 BOF

- Proposal:
  - Form a GGF WG
  - A WG charter, including work plan, will be developed prior to July meeting
  - The charter will be discussed, finalized, and forwarded to GFSC at July meeting

Sample Architectures

- Johnston
- Moore and Johnston
- Moore
- Moore
- Aydt
- Foster, Kesselman, et al

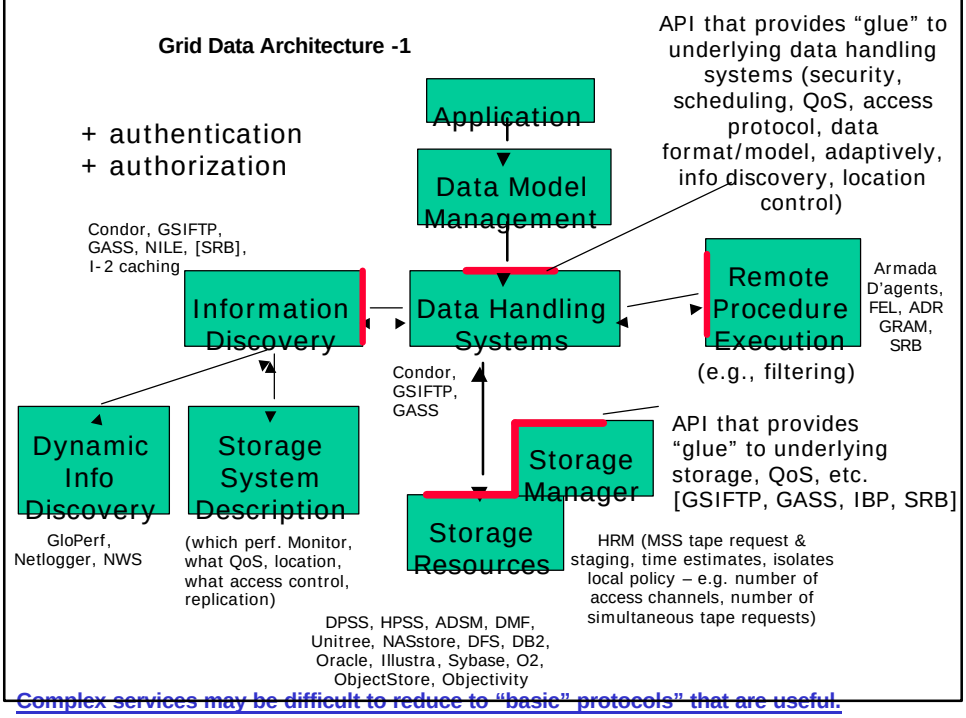


Grid Forum "Interactions"

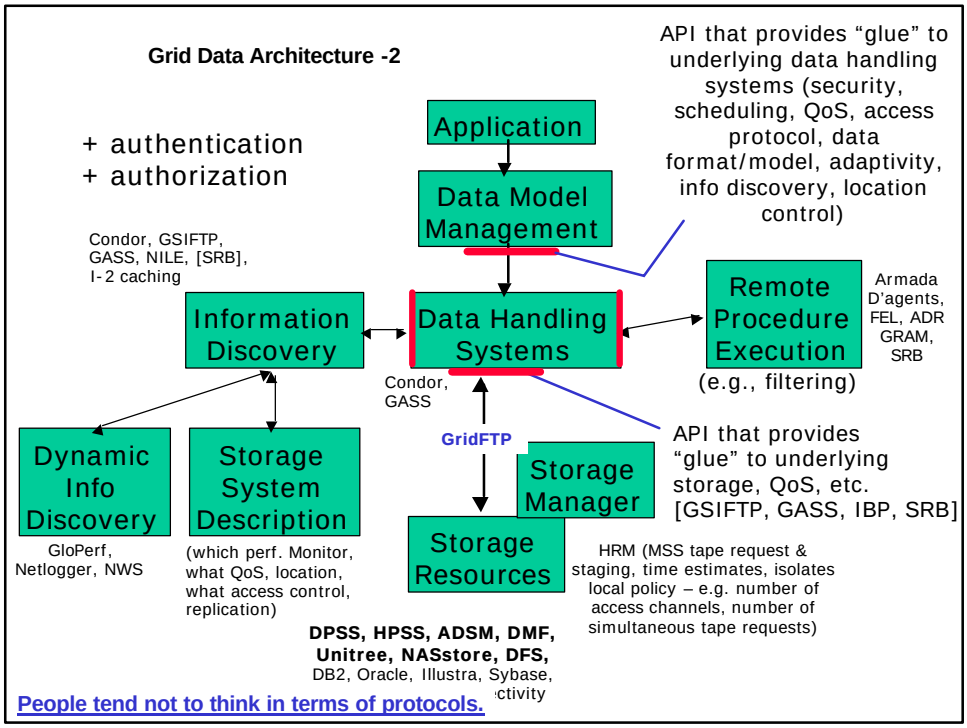
GF WG "Levels"	Data	Accounting	Scheduling	Performance	Information Services	Grid Computing Environment
Higher services	file, object, collection access	accounting interface	scheduler interface	monitoring data consumer	information discovery	workbench, portal, PSE
Management	replica catalog	user registration	distributed scheduler manager	monitoring aggregation server	resource addition service	process / workflow management
Persistence, …	metadata catalogue	Grid usage repository	reservation information	monitor repository	Grid resource naming repository	portal state information
Resource Abstraction Standards	GridFTP, ODBC, SRB	audit information exchange	policy request description exchange	monitor information exchange	resource capability info. exch.	standard run environment interface
Transport and Security					SDLIP	
	GSS, PKI, TLS, TCP/IP					
Resource Interfaces	storage system interfaces	usage tracking interface	local sched. intf., policy intf.	monitor data producer	info. repository interface	local run environment interface

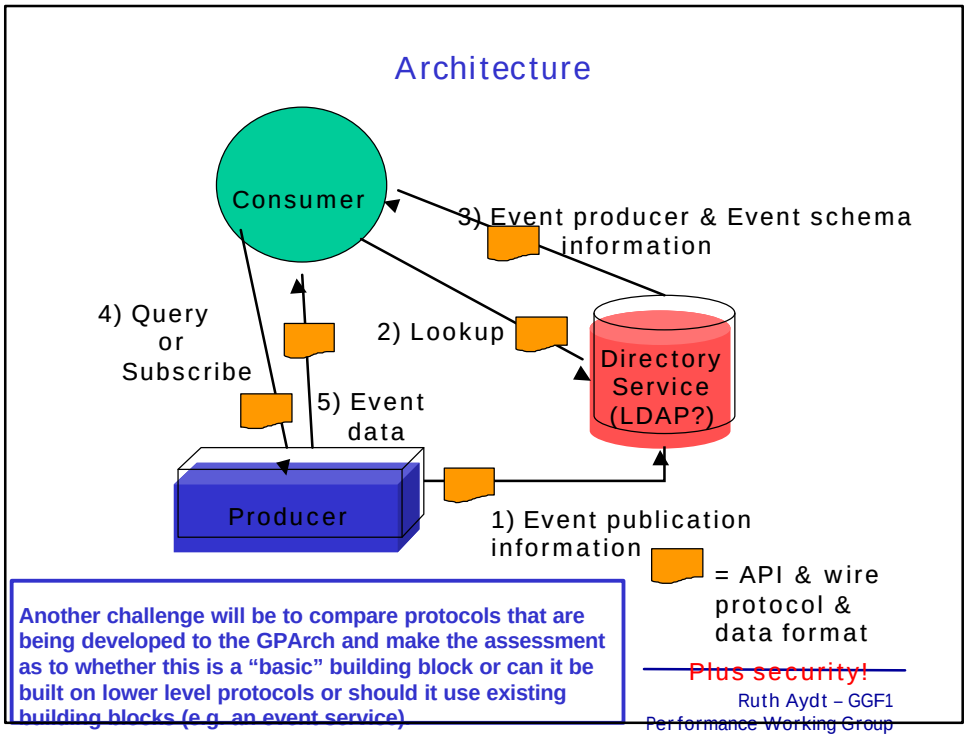
What services are the basic building blocks?

Grid Data Architecture -1

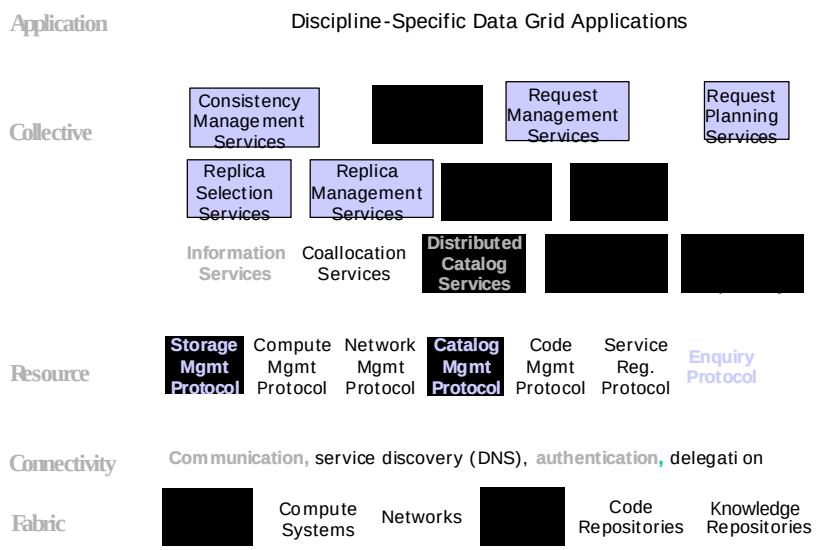


~~Complex services may be difficult to reduce to "basic" protocols" that are useful.~~


Grid Data Architecture -2
API that provides "glue" to underlying data handling systems (security, scheduling, QoS, access protocol, data format/model, adaptivity, info discovery, location control)
+ authentication
+ authorization
Application
Data Model Management
Condor, GSIFTP, GASS, NILE, [SRB], I-2 caching
Information Discovery
Data Handling Systems
Remote Procedure Execution
Armada D'agents, FEL, ADR GRAM, SRB
(e.g., filtering)
Condor, GASS
GridFTP
API that provides "glue" to underlying storage, QoS, etc. [GSIFTP, GASS, IBP, SRB]
Dynamic Info Discovery
Storage System Description
Storage Manager
Storage Resources
GloPerf, Netlogger, NWS
(which perf. Monitor, what QoS, location, what access control, replication)
HRM (MSS tape request & staging, time estimates, isolates local policy – e.g. number of access channels, number of simultaneous tape requests)
DPSS, HPSS, ADSM, DMF, Unitree, NASstore, DFS,
DB2, Oracle, Illustra, Sybase,
People tend not to think in terms of protocols.


Architecture
Consumer
3) Event producer & Event schema information
4) Query or Subscribe
2) Lookup
Directory Service (LDAP?)
5) Event data
Producer
1) Event publication information
= API & wire protocol & data format
Plus security!
Another challenge will be to compare protocols that are being developed to the GPArch and make the assessment as to whether this is a "basic" building block or can it be built on lower level protocols or should it use existing building blocks (e.g. an event service)
Ruth Aydt – GGF1 Performance Working Group

Foster, Kesselman, et al, Architecture



Grid Protocol Architecture Working Group DRAFT Charter

- The role of the Grid Protocol Architecture Working Group is to provide a conceptual framework for discussing the interrelationships, completeness, and minimality of the protocol approach to Grid services that is coming out of GF.

Charter discussion points

- The GPA-WG will define an architecture for the protocols, services, and API model of Grids
- An architecture document will identify Grid functions and services, and their relationship to applications, resources, and the other services. The document will also attempt to identify a minimally complete set of functions and services.

Charter discussion points

- The GPAWG will examine the work of the other WGs in the context of this architecture and comment on both minimality and completeness of the overall GF work.
  - document missing protocols in a way that encourages action in existing WGs or creation of new WGs.
  - document what appears to be non-minimal elements and modify the architecture and/or convey these observations to the WGs.

Charter discussion points

- The GPA-WG will also examine the relationship of the architecture that it produces with respect to other approaches such as CORBA, peer-to-peer, etc.